Lesson 3.1: Learning the Key Terms

Directions: Place the letter of the best definition next to each key term.

1. cutaneous membrane
2. epithelial membranes
3. membranes
4. mucous membranes
5. pericardium
6. peritoneum
7. pleura
8. serous fluid
9. serous membranes
10. synovial fluid
11. synovial membrane

A. the lining of the synovial joint cavity that makes synovial fluid
B. thin sheets or layers of pliable tissue
C. the membrane encasing the heart
D. the membrane lining the abdominal cavity
E. thin sheets of tissues that line body cavities closed to the outside world
F. thin sheets of tissue that line the body’s internal and external surfaces
G. a thin, clear liquid which acts as a lubricant between parietal and visceral membranes
H. another name for skin
I. thin sheets of tissue lining the body cavities which open to the outside world
J. a clear liquid secreted by synovial membranes that gives cushioning for and decreases friction in synovial joints
K. the membrane that surrounds the lungs
Lesson 3.1: Study Questions

Directions: Answer the questions below on a separate sheet of paper. Studying the answers will help you prepare for the chapter test.

1. What purpose do body membranes serve?
2. What are the two main categories of body membranes?
3. Where can epithelial membranes be found in the body?
4. How many epithelial membranes are there? Name them.
5. How do serous and mucous membranes differ?
6. List three examples of mucous membranes.
7. List three examples of serous membranes.
8. Using some anatomy and physiology terms you learned in chapters 1 and 2, describe the structure of skin. Is the skin squamous, cuboid, or columnar? Is it smooth muscle? Are glandular organs or tissues found in the skin?
9. What is the function of serous fluid?
10. What is the relationship between synovial membranes and synovial fluid? What is the function of synovial fluid?
11. Give an example of a synovial joint found in the body.
12. What are bursae?
Lesson 3.2: Learning the Key Terms

Directions: Use the terms listed below to fill in the sentence blanks.

dermis  keratin  papillary layer  stratum corneum
epidermal dendritic  keratinocytes  reticular layer  stratum granulosum
cells  melanin  sebaceous glands  stratum lucidum
epidermis  melanocytes  sebum  stratum spinosum
hypodermis  Merkel cells  stratum basale  sudoriferous glands
integumentary system

1. _____________________________ are specialized cells in the skin which produce melanin.
2. The _____________________________ is the clear layer of thick skin found only on the palms of the hands, fingers, soles of the feet, and toes.
3. Found between the epidermis and hypodermis, the _____________________________ also includes nerve endings, glands, and hair follicles.
4. Located all over the body, the _____________________________ produce sebum.
5. The deepest layer of the epidermis is called the _____________________________.
6. The layer of skin located under the dermis and known as the _____________________________, stores fat.
7. The _____________________________ secrete sweat and are distributed in the dermis over the entire body.
8. _____________________________ is a tough protein found in the skin, hair, and nails.
9. A level of somewhat flattened cells, the _____________________________ lies just superficial to the stratum spinosum and inferior to the stratum lucidum.
10. The _____________________________ is the enveloping organ of the body that includes the epidermis, dermis, sudoriferous and sebaceous glands, plus hair and nails.
11. The _____________________________ is the coat of skin superficial to the papillary layer.
12. The layer of cells in the epidermis superior to the stratum basale and inferior to the stratum granulosum is called the _____________________________.
13. _____________________________ is an oily substance that helps to keep the skin and hair soft.
14. The pigment _____________________________ protects the body against the damaging effects of the sun’s ultraviolet rays.
15. The _____________________________ initiate an immune system response to foreign bacteria or viruses.
16. The epidermis’s outer layer is known as the _____________________________.
17. The cells within the epidermis that make keratin are called _____________________________.
18. The outer coat of the dermis is called the _____________________________.
19. _____________________________ are the skin’s touch receptors.
20. The outer layer of skin is called the _____________________________.

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Introduction to Anatomy and Physiology
Lesson 3.2: Study Questions

Directions: Answer the questions below on a separate sheet of paper. Studying the answers will help you prepare for the chapter test.

1. Name four functions of the integumentary system.
2. How does the skin help to regulate body temperature?
3. How many layers of tissue does the epidermis include?
4. What are the names of the layers of epidermis?
5. The skin contains structures that overlap with another body system. These structures allow the skin to sense and feel pressure, temperature, or pain. What are these structures and what other body system are they a part of?
6. How does the skin continually renew itself?
7. What substance determines your skin color?
8. Explain the anatomy behind tanning.
9. What kind of response do foreign bacteria or viruses stimulate in epidermal dendritic cells?
10. What is the function of the hypodermis?
11. What happens to the collagen and elastic fibers during aging?
12. How many appendages of the skin are there, and what are they called?
13. Explain how sweat develops an unpleasant odor.
14. What are the benefits of sebum, the oil substance secreted through hair follicles and the skin?
15. Why does hair gray with age?
16. What are the three shapes of hair follicles and how do the different shaped follicles affect the nature of hair?
17. Describe the anatomy behind a goose bump.
18. Fingernails and toenails are actually transparent, but appear pink. Why?
Lesson 3.2: Parts of the Skin

Directions: Label the figure with the letter of the appropriate callouts from the list provided.

A. lipocytes (fat cells)  
B. arrector pili muscle  
C. epidermis  
D. vein  
E. hair shaft  
F. reticular layer  
G. nerve fibers  
H. sebaceous gland  
I. sweat gland  
J. sweat gland duct  
K. hair follicle  
L. hypodermis  
M. papillary layer  
N. artery  
O. pore of sweat gland duct  
P. dermis  
Q. tactile corpuscle  
R. lamellar corpuscle
Lesson 3.2: Layers of the Epidermis

Directions: Label the figure with the letter of the appropriate callouts from the list provided.

1. dermis
2. living keratinocytes
3. tactile nerve fiber
4. sweat duct
5. Merkel cell
6. dermal papilla
7. stratum spinosum
8. dermal blood vessels
9. stem cell
10. shedding keratinocytes
11. stratum corneum
12. stratum basale
13. stratum granulosum
14. dendritic cell
15. sweat pore
16. melanocyte
17. stratum lucidum
18. dead keratinocytes
Lesson 3.3: Learning the Key Terms

**Directions:** *Place the letter of the best definition next to each key term.*

- 1. basal cell carcinoma
- 2. cellulitis
- 3. common warts
- 4. first-degree burns
- 5. herpes simplex virus type 1 (HSV-1)
- 6. herpes simplex virus type 2 (HSV-2)
- 7. herpes varicella (chickenpox)
- 8. herpes zoster (shingles)
- 9. impetigo
- 10. malignant melanoma
- 11. peritonitis
- 12. plantar warts
- 13. pleurisy
- 14. psoriasis
- 15. rule of nines
- 16. second-degree burns
- 17. squamous cell carcinoma
- 18. third-degree burns
- 19. tinea

A. a bacterial infection characterized by an inflamed area of skin that is red, swollen, and painful
B. a bacterial infection common in elementary school children in which pink, blister-like bumps appear, usually on the face
C. inflammation of the pleura, the membrane that encases the lungs
D. the most common form of skin cancer and the least malignant type
E. cancer of the melanocytes; the most serious form of skin cancer
F. the genital form of herpes
G. a common skin disorder that involves redness, irritation, and scales (flaky, silver-white patches) that itch, crack, and sometimes bleed
H. generates cold sores or fever blisters around the mouth
I. inflammation of the peritoneum
J. a highly contagious, common childhood disease characterized by very itchy, fluid-filled blisters
K. a method used to calculate body surface area affected by burns
L. a fungal infection that tends to occur in moist areas of the body
M. a disease that involves a painful, blistering rash accompanied by headache, fever, and a general feeling of unwellness
N. warts that develop on the soles of the foot, grow inward, and can become painful
O. a type of rapidly growing cancer that appears as a scaly, reddened patch of skin
P. a skin blemish that typically surfaces on the hands or fingers and disappears without treatment
Q. burns that affect only the epidermal layer of skin
R. burns that involve damage to both the epidermis and the upper portion of the underlying dermis; characterized by blisters
S. burns that destroy the entire thickness of the skin
Lesson 3.3: Study Questions

Directions: Answer the questions below on a separate sheet of paper. Studying the answers will help you prepare for the chapter test.

1. How quickly do new epithelial cells reach the surface of the skin?
2. What causes bedsores?
3. Identify some vitamins and minerals that might be useful for both preventing and treating bedsores.
4. What are the differences between first-, second-, and third-degree burns?
5. What is the rule of nines? Describe its parts.
6. What are the three categories of infections of the skin and membranes?
7. Explain the difference between herpes simplex virus type 1 and herpes simplex virus type 2.
8. All types of warts are caused by the human papillomavirus (HPV), but there are high-risk and low-risk HPVs. What is the difference between high-risk and low-risk HPVs?
9. What kind of infection is herpes?
10. Why can't HPV infections spread to other parts of the body?
11. What are four common fungal infections? Where do they typically develop?
12. What causes the redness associated with inflammation?
13. What symptoms characterize the inflammatory conditions of the skin and membranes such as pleurisy, peritonitis, and psoriasis?
14. Explain the difference between benign and malignant cancer.
15. Identify and describe the three types of skin cancer.
16. Explain the ABCD rule for detecting melanoma.
Lesson 3.3: Contagious or Non-Contagious?

**Directions:** Using the list below, classify the following skin and membrane infections as either contagious or non-contagious by writing the name of the infection under the appropriate heading.

<table>
<thead>
<tr>
<th>Contagious</th>
<th>Non-Contagious</th>
</tr>
</thead>
<tbody>
<tr>
<td>athlete’s foot</td>
<td>peritonitis</td>
</tr>
<tr>
<td>basal cell carcinoma</td>
<td>plantar warts</td>
</tr>
<tr>
<td>common warts (HPV)</td>
<td>pleurisy</td>
</tr>
<tr>
<td>genital warts</td>
<td>psoriasis</td>
</tr>
<tr>
<td>herpes simplex I</td>
<td>ringworm</td>
</tr>
<tr>
<td>herpes simplex II</td>
<td>shingles</td>
</tr>
<tr>
<td>herpes varicella</td>
<td>squamous cell carcinoma</td>
</tr>
<tr>
<td>impetigo</td>
<td></td>
</tr>
<tr>
<td>jock itch</td>
<td></td>
</tr>
<tr>
<td>malignant melanoma</td>
<td></td>
</tr>
</tbody>
</table>

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Chapter 3: Researching Careers

**Directions:** There are many careers related to the integumentary system and membranes of the body. Using Internet resources such as the online Occupational Outlook Handbook, research the following careers associated with the integumentary system and body membranes. What are the educational requirements for each job? Are specific undergraduate courses required? Is an associate’s or bachelor’s degree adequate, or is graduate or professional school also necessary? What skills or abilities might benefit a person working in each career? What are the average salaries and future prospects in each area?

<table>
<thead>
<tr>
<th>Career</th>
<th>Related or Required Courses</th>
<th>Degree Required</th>
<th>Necessary Skills and Abilities</th>
<th>Projected Salary</th>
<th>Job Outlook</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dermatologist</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermatology Technician</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical Aesthetician</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Medical Assistant</td>
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<tr>
<td>Pediatric Dermatologist</td>
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<tr>
<td>Veterinary Dermatologist</td>
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<td></td>
</tr>
</tbody>
</table>

If you had to select one of these occupations, which one would you choose and why?

______________________________________________________________________________________________________________

______________________________________________________________________________________________________________

______________________________________________________________________________________________________________

______________________________________________________________________________________________________________
Chapter 3 Lab Investigation: Membranes and Skin

Purpose
In this activity you will identify membranes and investigate skin thickness.

Materials
your textbook, your body

Procedure
Membranes
1. What type of epithelial membrane covers the outside surface of the body?
_______________________________________________________________________________________________________

2. What type of epithelial membrane lines body cavities that are open to the outside world?
_______________________________________________________________________________________________________

3. What type of epithelial membrane lines body cavities that are not open to the outside world?
_______________________________________________________________________________________________________

4. Point to the three types of epithelial membranes in the illustrations below.

Skin Thickness Variability
In this investigation you will use the thicknesses of two areas of your skin as a standard to compare thicknesses of selected skin areas of your body. Pinch your skin in these two areas to gauge the thickness of your skin:
• skin just superior to your eyelid
• skin on the posterior surface of your neck
Pinch your skin in the areas listed below to compare the skin thickness of each area with the eyelid and posterior neck thicknesses. Next to each area, write same as eyelid, same as posterior of neck, or in between. Compare your results with those of your classmates. (Note: if you are unsure of any of the locations listed below, review what you learned about anatomical position and directions in chapter 1.)

1. anterior surface of forearm
2. posterior surface of hand
3. palm of hand
4. medial surface of upper arm
5. forehead superior to eyebrow
6. sole of foot
7. dorsal surface of lower leg
8. superior surface of foot
9. lateral surface of abdomen
10. anterior surface of abdomen
11. anterior surface of neck, below Adam’s apple
12. dorsal surface of elbow

Conclusions

Membranes

Classify the linings of these organs or areas as serous or mucous membranes:

1. visceral pericardium
2. esophagus
3. parietal peritoneum
4. abdominal cavity wall
5. trachea
6. small intestine

Skin Thickness Variability

1. Which area of the skin was the thickest?
2. Which area of the skin was the thinnest?
3. What, if any, variations did you notice between different classmates with regard to the different thicknesses that you measured?
Chapter 3 Practice Test

Completion: Carefully read the following statements. Write the term that completes the statement in the spaces provided.

1. The ___________________________ is the enveloping organ of the body that includes the epidermis, dermis, sudoriferous and sebaceous glands, plus hair and nails.
2. ___________________________ is an oily substance that supports keeping the skin and hair soft.
3. Thin sheets or layers of pliable tissue are called ___________________________.
4. Herpes varicella, better known as ___________________________, is a common childhood disease.
5. When a tumor is cancerous, it is said to be ___________________________.

True/False: Indicate whether each statement below is true or false by circling either T or F.

T   F  6. Skin makes up approximately 15% of a person’s total body weight.
T   F  7. Synovial membrane is the only type of membrane in the body that does not have any epithelial cells.
T   F  8. Phototherapy is treatment for psoriasis in which the skin is exposed to UVB rays.
T   F  9. Second- and third-degree burns are called partial-thickness burns.
T   F  10. Sebaceous glands are located all over the body except for the palms of the hands and soles of the feet.

Multiple Choice: Circle the correct answer.

11. The parietal layer and visceral layer are classifications of which type of membrane?
   A. mucous membrane
   B. serous membrane
   C. cutaneous membrane
   D. connective tissue membrane

12. How often does the epidermis replace itself?
   A. every 5 days
   B. every 25 to 45 days
   C. every 60 to 90 days
   D. every 90 days to 120 days

13. According to the rule of nines, what percentage of the body is affected if the anterior torso and the anterior and posterior portions of both arms are burned?
   A. about 14%
   B. about 18%
   C. about 27%
   D. about 36%

14. Thin sheets of tissue that line the body’s internal and external surfaces are _____.
   A. cutaneous membrane
   B. epithelial membrane
   C. pleura
   D. peritoneum

15. What produces the pigment that gives hair its color?
   A. impetigo
   B. tinea
   C. synovial fluid
   D. melanocytes
Matching: Match each key term to its definition by writing the letter of the definition in the spaces provided.

____ 16. synovial membrane
____ 17. pleurisy
____ 18. squamous cell carcinoma
____ 19. papillary layer
____ 20. cellulitis
____ 21. stratum basale
____ 22. pericardium
____ 23. shingles
____ 24. sudoriferous glands
____ 25. serous membranes

A. a bacterial infection characterized by an inflamed area of skin that is red, swollen, and painful
B. the membrane encasing the heart
C. a disease that involves a painful, blistering rash accompanied by headache, fever, and a general feeling of unwellness
D. the deepest layer of the epidermis
E. the membrane that surrounds the lungs
F. thin sheets of tissues that line body cavities closed to the outside world
G. these secrete sweat and are distributed in the dermis over the entire body
H. inflammation of the pleura, the membrane that encases the lungs
I. the outer coat of the dermis
J. a type of rapidly growing cancer that appears as a scaly, reddened patch of skin

Art Labeling: Locate each of the following items on the drawing by placing the corresponding letter on the blanks provided.

____ 26. shedding keratinocytes
____ 27. tactile nerve fiber
____ 28. stratum granulosum
____ 29. dermis
____ 30. Merkel cell
____ 31. melanocyte
____ 32. dermal papilla
____ 33. sweat pore
____ 34. stratum basale
____ 35. dendritic cell

Short Answer: Answer the following questions using what you have learned in this chapter.

36. Explain the purpose of the ABCD rule. What do the letters stand for?
37. Describe three functions of the integumentary system.